



SST-64P PCI Adapter and Subsystem

Installer/User Guide



USA Notification

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canadian Notification

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Safety and EMC Approvals and Markings

IEC 60950-1:2000, EN 60950-1:2001, UL 60950 3rd Ed. / CSA 22.2 No. 60950:2000,
EN 55022:1998+A1:2000+A2:2003, EN 61000-3-3:1995+A1:2001 EN 55024:1998+A1:2001+A2:2003,
FCC Part 15 Class A



SST-64P PCI Adapter and Subsystem Installer/User Guide

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**Instructions**

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**Dangerous Voltage**

This symbol is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

**Power On**

This symbol indicates the principal on/off switch is in the on position.

**Power Off**

This symbol indicates the principal on/off switch is in the off position.

**Protective Grounding Terminal**

This symbol indicates a terminal which must be connected to earth ground prior to making any other connections to the equipment.

TABLE OF CONTENTS

List of Figures	v
Chapter 1: Product Overview	1
<i>Features and Benefits</i>	<i>1</i>
<i>The SST-64P PCI Adapter</i>	<i>1</i>
<i>Compatibility with Prior Models</i>	<i>2</i>
<i>Rack Mount Safety Considerations</i>	<i>2</i>
<i>Part Numbers</i>	<i>3</i>
Chapter 2: Installation and Configuration	5
<i>Getting Started</i>	<i>5</i>
<i>Items supplied with the SST-64P PCI adapter</i>	<i>5</i>
<i>Additional items needed</i>	<i>5</i>
<i>Installing the SST-64P PCI Adapter</i>	<i>6</i>
<i>Installing Port Modules</i>	<i>7</i>
<i>Port Module LEDs</i>	<i>7</i>
<i>Using rack mount ears</i>	<i>8</i>
<i>Using an HBC</i>	<i>8</i>
<i>Using 4-foot and 1-foot HBCs</i>	<i>8</i>
<i>Using EBCs</i>	<i>9</i>
<i>Power Options</i>	<i>10</i>
Chapter 3: Port Module to Device Cabling	15
<i>RJ-45 Connectors</i>	<i>15</i>
<i>Port Module Port Pinouts</i>	<i>15</i>
<i>Modular Cables</i>	<i>18</i>
<i>Modular Adapters</i>	<i>18</i>
Index	21

LIST OF FIGURES

<i>Figure 1.1: SST-64P PCI Adapter</i>	<i>1</i>
<i>Figure 1.2: SST-64P PCI Adapter Compatibility</i>	<i>2</i>
<i>Figure 2.1: Installing the SST-64P PCI Adapter</i>	<i>6</i>
<i>Figure 2.2: Port Module</i>	<i>7</i>
<i>Figure 2.3: Port Module Mounting Options</i>	<i>8</i>
<i>Figure 2.4: SST-64P PCI Adapter - Host Bus Cable - Port Module</i>	<i>8</i>
<i>Figure 2.5: SST-64P PCI Adapter with Four Port Modules Connected using HBCs</i>	<i>9</i>
<i>Figure 2.6: 100 Foot (30.5 m) EBC</i>	<i>9</i>
<i>Figure 2.7: Port Modules Extended Distance Using EBCs</i>	<i>10</i>
<i>Figure 2.8: Default Power Jumper Settings</i>	<i>11</i>
<i>Figure 2.9: Connected Port Modules Draw Power from Host</i>	<i>12</i>
<i>Figure 2.10: PS-4 Supplying Power to Port Modules</i>	<i>13</i>
<i>Figure 2.11: Individual PS-4s Provide Power to Port Modules Separated by EBCs</i>	<i>13</i>
<i>Figure 3.1: Port Module Connector Pinouts</i>	<i>15</i>
<i>Figure 3.2: RJ-45 Jack Pinouts</i>	<i>16</i>
<i>Figure 3.3: Cable Pinouts for RJ-45 to Terminal/Printer DB-25</i>	<i>16</i>
<i>Figure 3.4: Cable Pinouts for RJ-45 to PC DB-9</i>	<i>17</i>
<i>Figure 3.5: Cable Pinouts for RJ-45 to Modem DB-25</i>	<i>17</i>
<i>Figure 3.6: RJ-45 Modular Cable Signals</i>	<i>18</i>
<i>Figure 3.7: Ten-wire Modular Adapters Internal Wiring</i>	<i>19</i>

CHAPTER**1*****Product Overview*****Features and Benefits**

The Avocent SuperSerial Technology (SST) expandable I/O subsystem is a high-speed serial communications multiple port product. It consists of modular components that can be configured in a variety of combinations to satisfy most applications.

The SST-64P PCI Adapter

The SST-64P PCI adapter (see Figure 1.1) occupies one PCI slot in the host computer and provides the intelligent communications functions to “off-load” the CPU from serial communications processing tasks.

The SST-64P PCI adapter contains one SuperSerial Processor, which controls up to 64 ports.

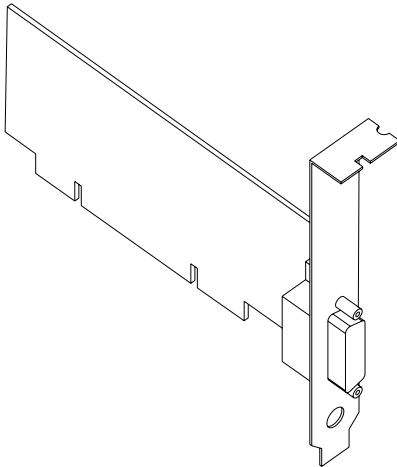


Figure 1.1: SST-64P PCI Adapter

Each SST-64P PCI adapter includes software drivers and installation manuals for Microsoft Windows, Linux and UNIX operating systems on a CD ROM. When booted, the PCI bus system automatically identifies and configures all PCI devices connected to the system.

Compatibility with Prior Models

Low profile SST-64P PCI adapters and rack-optimized port modules are compatible with the same device drivers as prior models, and you can use them with the same cables, modular adapters and port modules. You can also use rack-optimized port modules with prior model SST-64P adapters and port modules. Low profile SST-64P PCI adapters may be installed together with prior model SST PCI adapters in the same server.

Figure 1.2 illustrates compatibility among rack-optimized port modules and prior models.

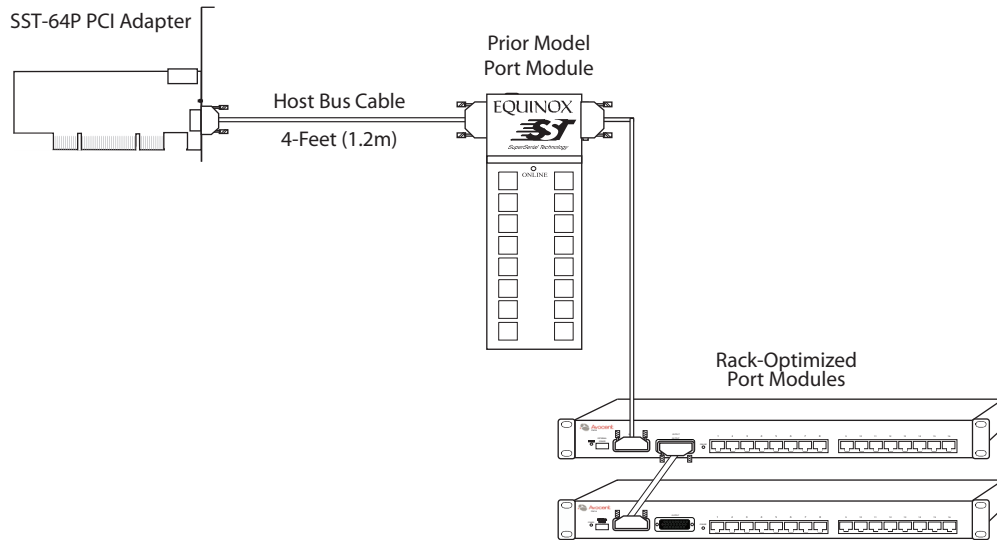


Figure 1.2: SST-64P PCI Adapter Compatibility

Rack Mount Safety Considerations



- **Elevated Ambient Temperature:** If installed in a closed rack assembly, the operation temperature of the rack environment may be greater than room ambient. Use care not to exceed the rated maximum ambient temperature of the unit.
- **Reduced Airflow:** Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
- **Mechanical Loading:** Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- **Circuit Overloading:** Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Consider equipment nameplate ratings for maximum current.

- Reliable earthing of rack mounted equipment should be maintained. Pay particular attention to power supply connections other than direct connections to the branch circuit (for example, use of power strips).

Part Numbers

Table 1.1 lists part numbers for the SST-64P PCI adapter, port modules, power supply, modular adapters and cables.

Table 1.1: SST-64P PCI Adapter Part Numbers

Part Number	Description
990482	SST-64P PCI Adapter
990483	PM-16 RJ Port Module
990274-001	PS-4 Power Supply: 110V US Line Cord
990274-201	PS-4 Power Supply: 220V UK/IR Line Cord
990274-202	PS-4 Power Supply: 220V EU Line Cord
690374	Host Bus Cable, 1-foot
690277	Host Bus Cable, 4-foot
690341	Expansion Bus Cable, 10-foot
690302	Expansion Bus Cable, 25-foot
690306	Expansion Bus Cable, 100-foot
690252	10-wire Serial Cable, 10-foot
690253	10-wire Serial Cable, 25-foot
690254	10-wire Serial Cable, 75-foot
210068	DB-25 DTE Male Modular Adapter
210069	DB-25 DTE Female Modular Adapter
210070	DB-25 DCE Male Modular Adapter
210071	DB-25 DCE Female Modular Adapter
210072	DB-9 Female Modular Adapter
750080	10-wire Wiring Starter Kit

Installation and Configuration

Getting Started

Your computer's host processor recognizes the SST-64P PCI adapter as memory. That is, it is a memory mapped device. When you install the device driver on your computer, it maps all installed SST-64P PCI adapters into system memory. The device driver soft-configures all SST-64P PCI adapters each time you start (boot) your computer.

Before installing your SST-64P PCI adapter, refer to the following list to ensure that you have all the items necessary for your installation.

Items supplied with the SST-64P PCI adapter

The following are supplied with the SST-64P PCI adapter:

- SST-64P PCI Adapter
- 4-foot Host Bus Cable (HBC)
- SST-64P PCI Adapter Drivers and Installer/User Guide on CD-ROM

Additional items needed

You may need the following additional items (sold separately) to install your SST-64P PCI adapter:

- PM-16 RJ Port Module
- Expansion Bus Cable (EBC)
- 1-foot Host Bus Cable (HBC)
- PS-4 Power Supply
- 10-wire Modular Adapters
- 10-wire Serial Reversing Cables

Installing the SST-64P PCI Adapter

The following procedure describes how to physically install your SST-64P PCI adapter in your computer. Alternatively, you can follow the installation instructions provided in your host computer documentation.

To install the SST-64P PCI adapter:



1. Turn off the host computer and disconnect the power cord.
2. Locate an available Peripheral Component Interconnect (PCI) slot (see Figure 2.1).

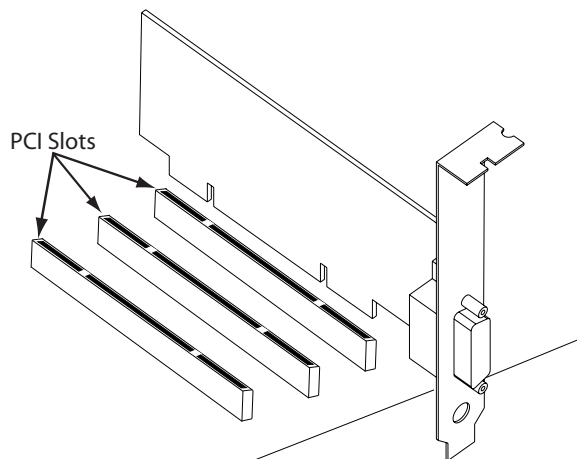


Figure 2.1: Installing the SST-64P PCI Adapter



3. Insert and secure the SST-64P PCI adapter firmly into the PCI slot.
4. Replace the power cord and turn on your host computer.

Each SST-64P PCI adapter includes software drivers and installation manuals for Microsoft Windows, Linux and UNIX operating systems on a CD ROM. When you start (boot) your computer, it automatically identifies and configures all connected PCI devices. Please refer to the serial CD ROM for device driver installation instructions.

Installing Port Modules

The SST-64P PCI adapter has one connector: a high-density 26-pin expansion bus port. You can connect up to four port modules, each with sixteen RJ-45 serial ports, on the expansion bus port. This provides the SST-64P PCI adapter a total of 64 serial ports.

The 26-pin expansion bus port is a ring topology, which contains dedicated time slots for 64 ports of full-duplex serial data. The last port module connected to the adapter terminates the ring.

Two types of expansion bus cables are provided to connect port modules to SST-64P PCI adapters:

- Host Bus Cables (HBCs) accommodate serial data transfers and power for the downstream port modules. HBCs came in two sizes: 4-foot (PN 690227) and 1-foot (PN 690374).
- Expansion Bus Cables (EBCs) accommodate only serial data transfers. When connected to an EBC, downstream port modules require PS-4 power supplies for operational power. EBCs come in three sizes: 10-foot (PN 690341), 25-feet (PN 690302) and 100-feet (PN 690306).

Figure 2.2 shows a port module, which contains sixteen 10-wire RJ-45 serial ports, two 26-pin expansion bus ports (1 INPUT port for upstream connectivity and 1 OUTPUT port for downstream connectivity). The port module also contains an external power input connector to attach the PS-4 power adapter should it require external power.

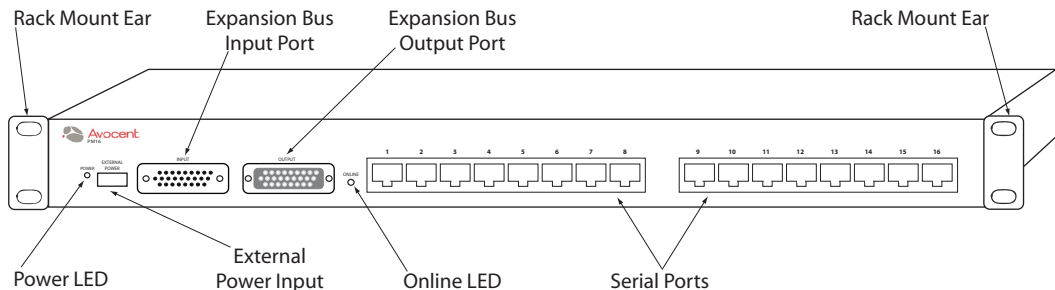


Figure 2.2: Port Module

Port modules allow you to connect serial devices to the SST-64P PCI adapter.

Port Module LEDs

Each port module contains an online LED and a power LED indicator. The online LED functions only after you install the driver software and indicates that the port module is available for use.

The power LED lights up when power is present to the port module.

Using rack mount ears

Each port module comes with two removable rack mount ears, which provide several mounting options. Rack mount ears allow you to install port modules in a 19-inch rack, on or under a shelf or table top, or on a wall. Figure 2.3 illustrates these various mounting options.

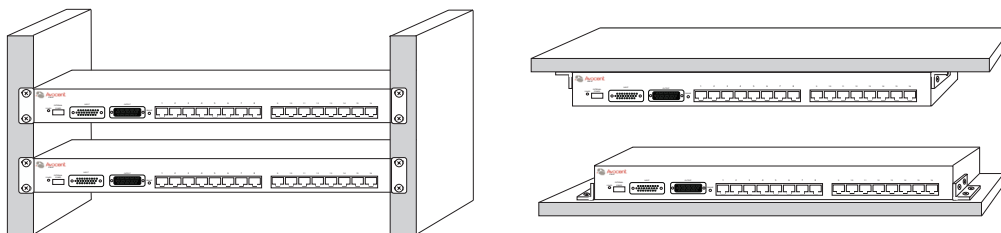


Figure 2.3: Port Module Mounting Options

Using an HBC

Figure 2.4 shows a basic 16-port configuration using an HBC. You can connect serial devices (such as terminals, printers, modems, bar code readers and cash registers) to the port modules.

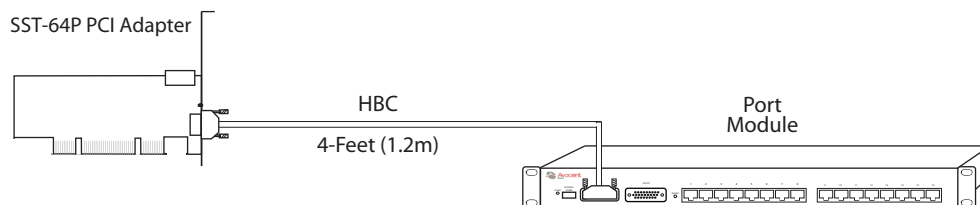


Figure 2.4: SST-64P PCI Adapter - Host Bus Cable - Port Module

Using 4-foot and 1-foot HBCs

You can connect up to four port modules to the expansion bus port of the SST-64P PCI adapter using Host Bus Cables (HBCs). First, interconnect the port modules from the OUTPUT connector of one to the INPUT connector of the next using 1-foot HBCs. Finally, connect the INPUT connector of the first port module to the expansion bus connector on SST-64P PCI adapter using a 4-foot HBC. This allows expansion of the entire system without disassembling the computer.

You can connect a maximum of four port modules per port bus as shown in Figure 2.5.

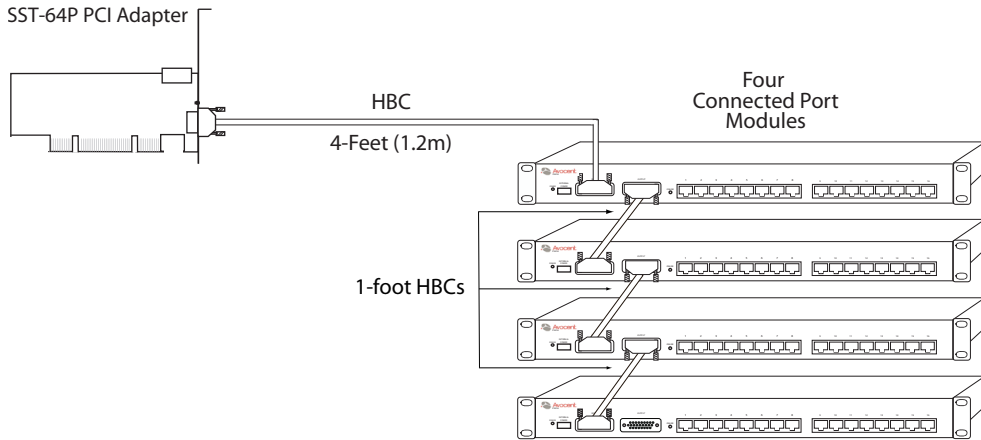


Figure 2.5: SST-64P PCI Adapter with Four Port Modules Connected using HBCs

Using EBCs

You can place port modules farther than the supplied 4-foot (1.2m) HBC allows by replacing the HBC with an EBC. As shown in Figure 2.6, a group of four port modules are located 100 feet (30.5m) from the host computer using an EBC. EBCs may be used when the host computer is located away from the wiring closet where all the peripheral cables are. When you attach port modules to an EBC (not an HBC), it is mandatory to supply power to the port modules using the optional power supply PS-4. For more information, see *Power Options* on page 10.

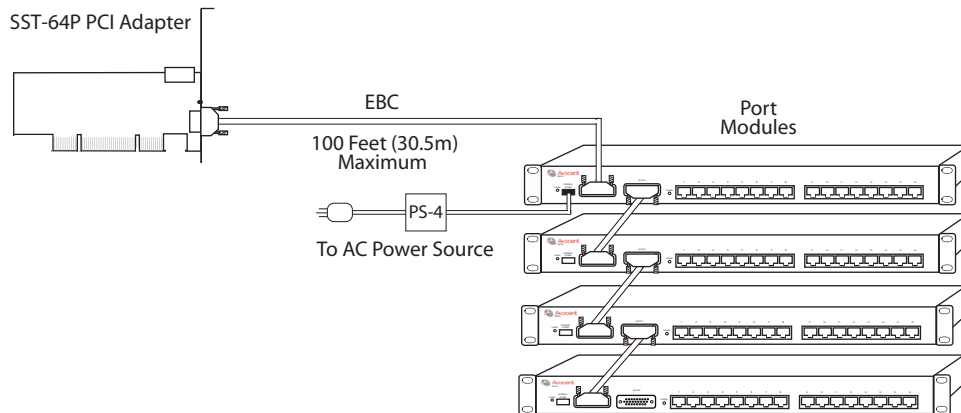


Figure 2.6: 100 Foot (30.5 m) EBC

EBCs are available in 10-foot (3.05m) (PN 690341), 25-foot (7.6m) (PN 690302) and 100-foot (30.5m) (PN 690306) lengths. In addition to extending the distance between the SST-64P PCI adapter and the port modules, you can use EBCs to extend the distance between adjacent port modules as shown in Figure 2.7. Port modules connected this way require the optional power supply PS-4.

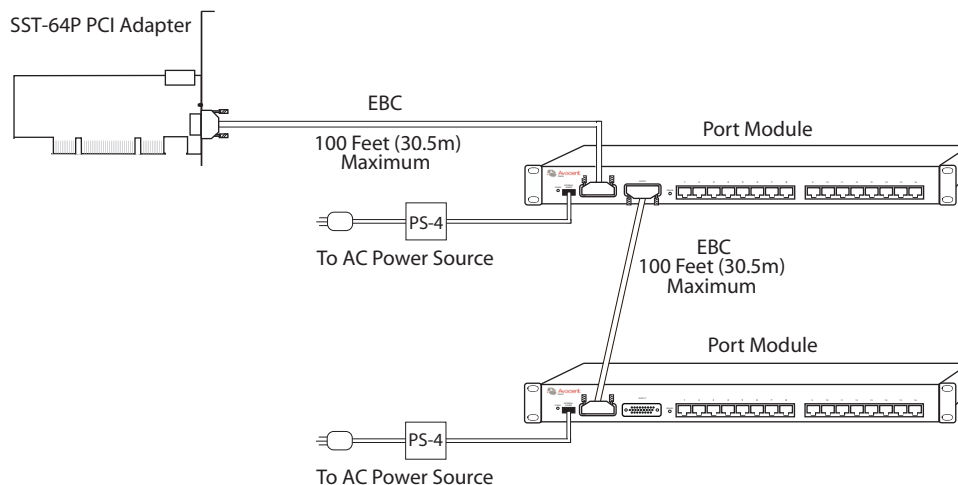


Figure 2.7: Port Modules Extended Distance Using EBCs

NOTE: The maximum distance between the SST-64P PCI adapter and the first port module is 100 feet (30.5m). The maximum distance between port modules is also 100 feet (30.5m).

Power Options

The SST-64P PCI adapter provides several options for sourcing power for attached port modules. These options are configurable via jumper settings. The default power jumper setting derives power for port modules from the PCI bus of the host computer.

NOTE: SST-64P PCI adapter power jumpers are configured to provide power to the port modules through the host bus cable. In most situations, you do not need to reconfigure any of the power jumpers.

SST-64 adapter jumper settings

The default power jumper setting, shown in Figure 2.8, selects the PCI bus as the power source for attached port modules. Refer to Table 2.1 for more jumper settings.

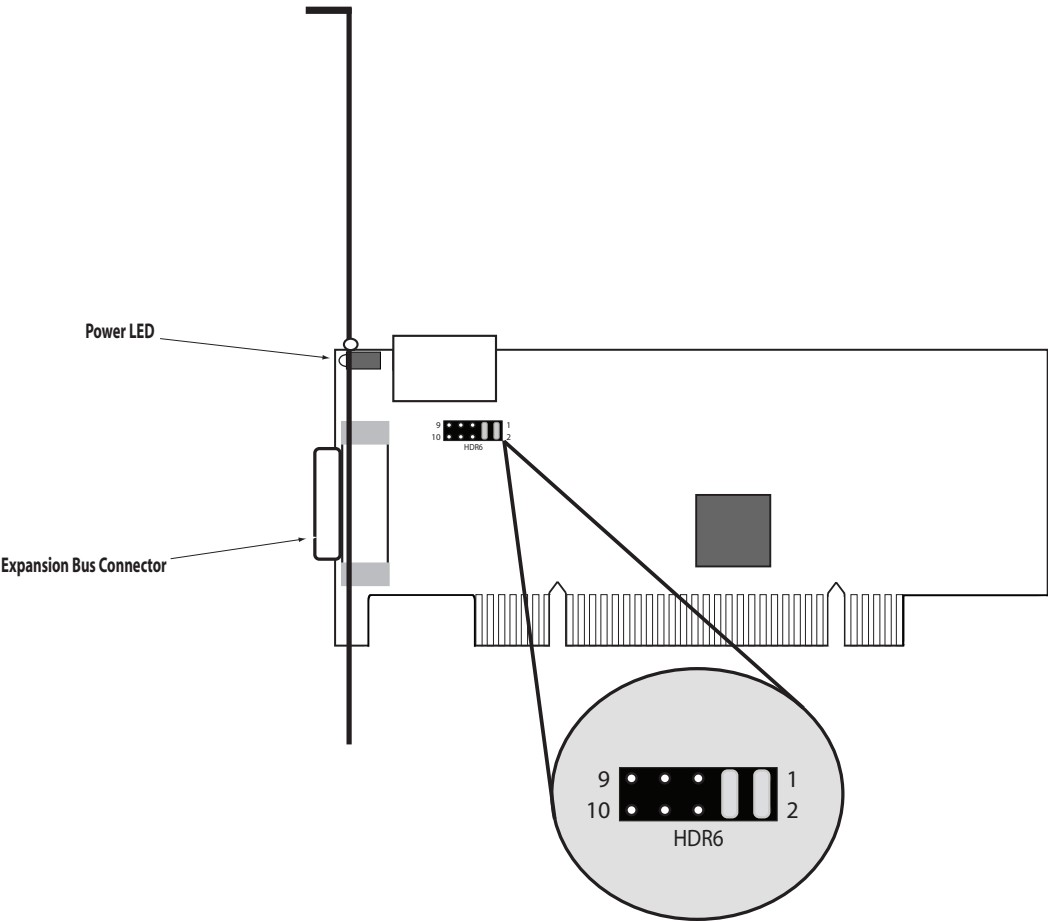



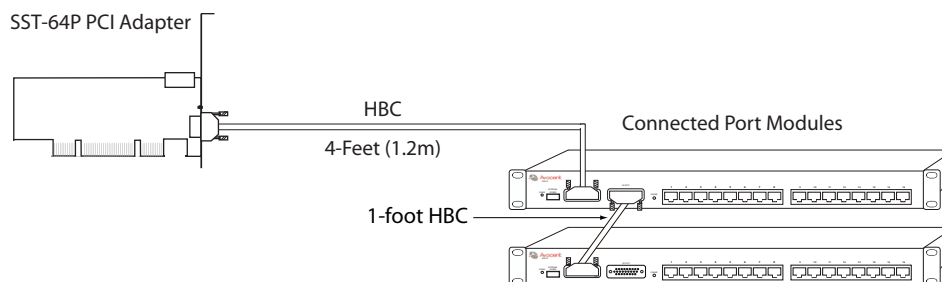


Figure 2.8: Default Power JumperSettings

Table 2.1: SST-64P Adapter Power Jumper Settings

Jumper Setting	Description
 <p>HDR6</p>	Derives power from the PCI bus connector to the EBC.
 <p>HDR6</p>	Derives power from P3 (4 pin right angle plug on top edge of adapter) to the EBC. This setting can be used to reduce load on the PCI bus when HBCs are used to connect port modules.
 <p>HDR6</p>	To use an external power supply (PS4) for port module(s) remove all jumpers or store them by tying pin 1 to pin 3 and pin 2 to pin 4. LED should be OFF.

In simple configurations, the SST-64P PCI adapter supplies power to all port modules attached to the expansion bus through the supplied 4-foot (1.2m) HBC (see Figure 2.9). The SST-64P PCI adapter provides power through the HBC to the first port module and to the next port module through the 1-foot HBC.

**Figure 2.9: Connected Port Modules Draw Power from Host**

NOTE: Port modules draw power from the host computer only when the port modules are connected using an HBC cable.

Port modules connected to an EBC (not an HBC) must be externally powered using the PS-4 optional power supply (PN 990274). Connect the power supply (purchased separately) to the first port module on the expansion bus (see Figure 2.10).

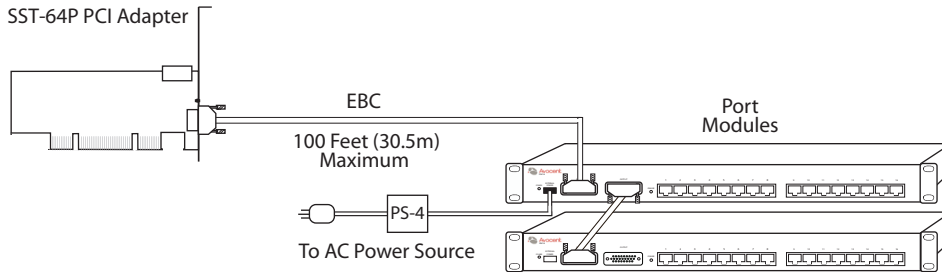


Figure 2.10: PS-4 Supplying Power to Port Modules

By connecting the PS-4 power supply to the first port module, power is no longer drawn from the host computer. All port modules connected to one another from the first port module are supplied power from the PS-4 power supply. The PS-4 power supply can supply power for up to four port modules if the port modules are interconnected using 1-foot HBCs.

When you use EBCs between port modules, attach a PS-4 power supply to each module as shown in Figure 2.11. This is required because EBC cables do not accommodate power transmission.

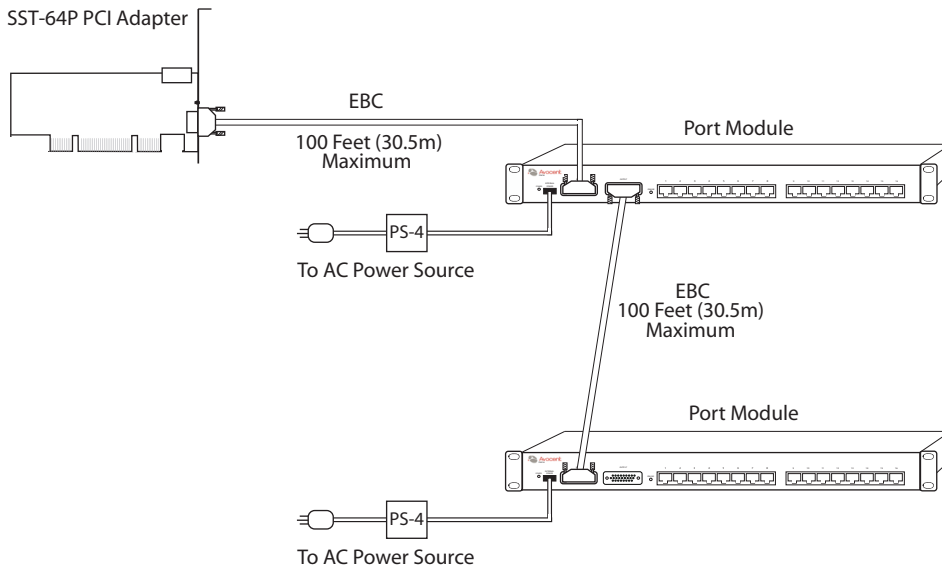


Figure 2.11: Individual PS-4s Provide Power to Port Modules Separated by EBCs

NOTE: Do not use 4-foot HBCs between port modules. Use only 1-foot HBCs or EBCs.

CHAPTER

3

Port Module to Device Cabling**RJ-45 Connectors**

SST port modules contain 10-wire RJ-45 connectors, to which you can connect to a wide variety of modular adapters (DB-25, DB-9, DTE and DCE) using 10-wire modular serial cables.

All serial ports provide a standard RS-232 interface with full modem control signals.

To help wire the serial ports, Avocent sells a complete set of cabling accessories. Refer to *SST-64P PCI Adapter Part Numbers* on page 3.

Port Module Port Pinouts

The port module provides standard RS-232 DTE signals on all modular jacks (10-pin). Each modular jack accommodates one serial device, see Figure 3.1.

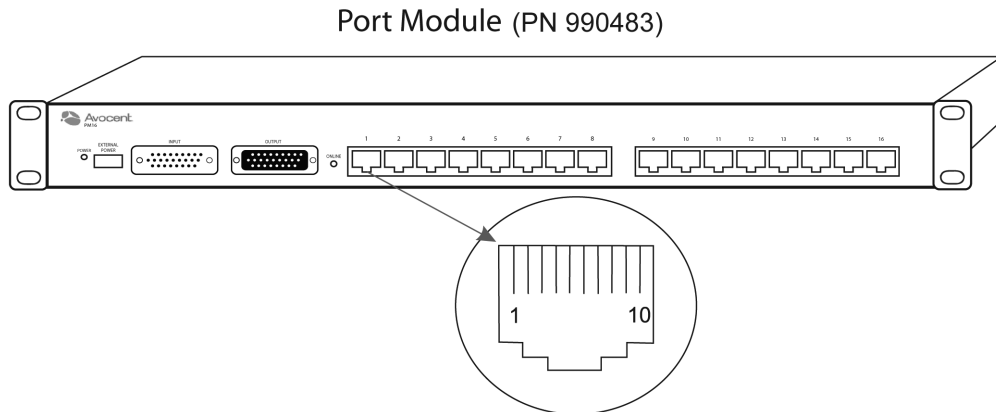


Figure 3.1: Port Module Connector Pinouts

See Figure 3.2 for the RJ-45 jack pinouts.

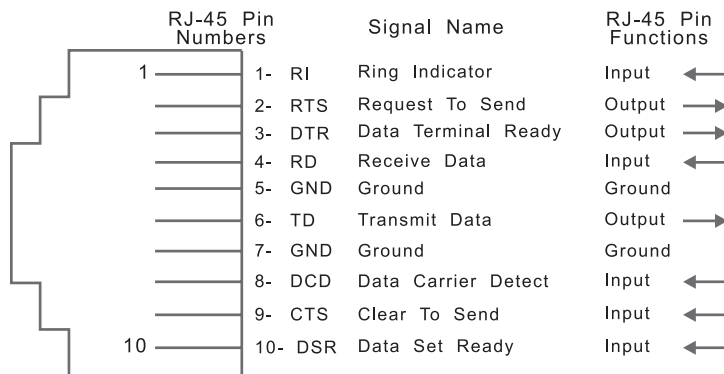


Figure 3.2: RJ-45 Jack Pinouts

Please note the following cabling considerations:



- All port module jacks face toward the front with the key on the bottom. Refer to Figure 3.3, Figure 3.4 and/or Figure 3.5 for modular jack cable pinouts.
- You can use either twisted-pair or flat modular cable as a signal path from port modules to peripheral devices. Twisted pair must be wired as a reversing cabling: Pin 1 to 10, pin 2 to pin 9 and so on.

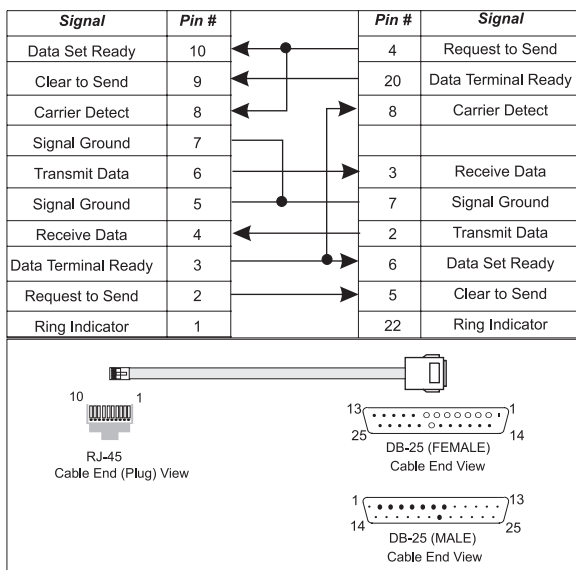


Figure 3.3: Cable Pinouts for RJ-45 to Terminal/Printer DB-25

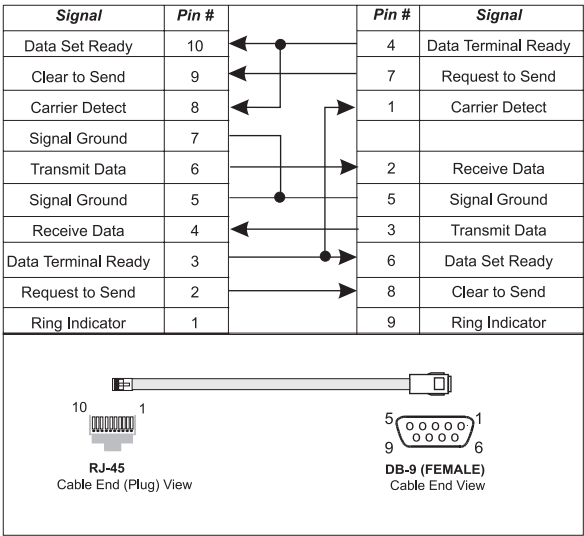


Figure 3.4: Cable Pinouts for RJ-45 to PC DB-9

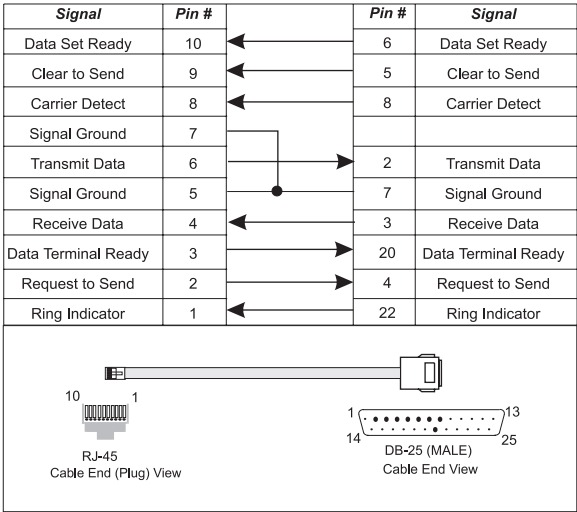


Figure 3.5: Cable Pinouts for RJ-45 to Modem DB-25

Modular Cables

The following cable diagrams show how to build your own cables to go between a port module and serial devices such as terminals, printers, PCs and modems.

RJ-45 modular cable is a flat cable often used for wiring telephones inside of buildings. The cable is terminated at each end with an RJ-45 modular plug (connector) which is inserted into the modular jack of an appropriate wiring module. Standard modular cables available from Avocent are reversing. That is, the pins are reversed on each end so that pin 1 on one end is connected to pin 10 on the opposite end. Figure 3.6 shows the signals passed through modular cables when connected to a port module serial port.

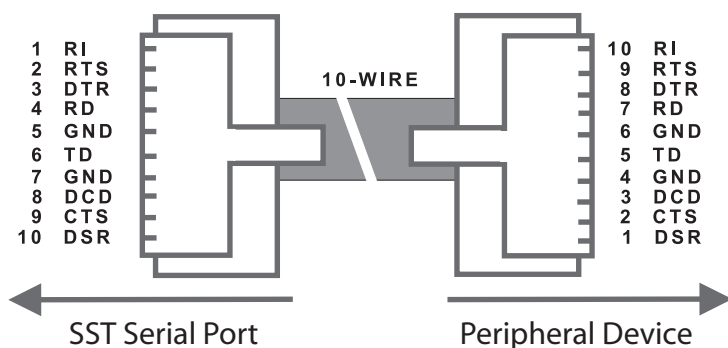
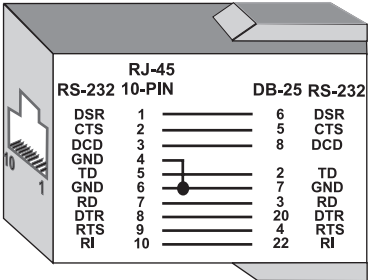


Figure 3.6: RJ-45 Modular Cable Signals

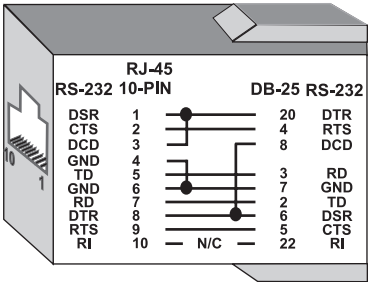
Modular Adapters

Figure 3.7 shows the internal wiring for the 10-wire modular adapters. Ten-wire modular adapters convert modular jacks to DB-25 (RS-232) connectors. Use the information in Figure 3.7 with the documentation provided with your host computer equipment as a guide to select the correct modular wiring accessories.

FOR MODEMS & MULTIPLEXERS:
210068 [DB-25 DTE Male]
210069 [DB-25 DTE Female]



FOR TERMINALS & PRINTERS:
210070 [DB-25 DCE Male]
210071 [DB-25 DCE Female]



FOR PERSONAL COMPUTERS:
210072 [DB-9 Female]

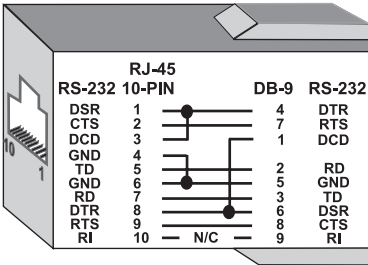


Figure 3.7: Ten-wire Modular Adapters Internal Wiring

INDEX

Numerics

- 100-foot EBC **10**
- 10-foot EBC **10**
- 10-wire modular adapters **18**
- 16-port configuration **8**
- 1-foot HBC **8**
- 25-foot EBC **10**
- 4-foot HBC **9**

A

- additional items **5**
- Ambient Temperature **2**

B

- booting your computer **5**

C

- cable diagrams **18**
- cables **2**
- Circuit Overloading **2**
- connecting serial devices **8**

D

- DB-25 (RS-232) connectors **18**
- dedicated time slots **7**
- default power jumper setting **10, 11**
- device drivers **2**

E

- EBCs **7, 10**
- expansion bus cables **7**
- expansion bus port **7, 8**

- external power **7**
- external power input connector **7**

F

- flat modular cables **16**
- full-duplex serial data **7**

H

- HBC **7, 8**
- host bus cables **7**

I

- INPUT connector **8**
- installation instructions **6**
- installation manuals **1, 6**
- installing port modules **7**
- installing the SST-64P PCI adapter **6**

L

- Linux **1**

M

- Mechanical Loading **2**
- Microsoft Windows **1, 6**
- modular adapters **2**
- modular jack cable pinouts **16**
- Mounting Options **8**
- mounting options **8**

O

- online LED indicator **7**
- operating systems **1, 6**
- OUTPUT connector **8**

OUTPUT port **7**

P

part numbers **3**

PCI bus **1, 10**

PCI devices **6**

port module **2, 7**

port module connector pinouts **15**

port module LEDs **7**

port module serial port **18**

port modules **7, 8**

power for the downstream port modules **7**

power jumpers **10**

power LED **7**

power LED indicator **7**

power supply PS-4 **10**

PS-4 power supplies **7**

PS-4 power supply **10**

R

Rack Mount Safety Considerations **2**

rack-mount ears **8**

rack-optimized port module **2**

Reduced Airflow **2**

Reliable earthing **3**

ring topology **7**

RJ-45 jack pinouts **15, 16**

RJ-45 modular cable **18**

RJ-45 modular cable signals **18**

RJ-45 modular plug **18**

S

Safety Considerations **2**

serial communications processing **1**

serial data transfer **7**

serial data transfers **7**

software drivers **1, 6**

SST **1**

SST-64P PCI Adapter **1, 6**

SST-64P PCI adapter **1, 2, 5**

SuperSerial Processor **1**

SuperSerial Technology (SST) **1**

supplied items **5**

system memory **5**

T

Ten-wire modular adapters **18**

ten-wire modular adapters internal wiring **19**

twisted-pair cables **16**

U

UNIX **1, 6**

W

Windows **1, 6**



For Technical Support:

www.avocent.com/support

Avocent Corporation
4991 Corporate Drive
Huntsville, Alabama 35805-6201
USA
Tel: +1 256 430 4000
Fax: +1 256 430 4031

Avocent Asia Pacific
Singapore Branch Office
100 Tras Street, #15-01
Amara Corporate Tower
Singapore 079027
Tel: +656 227 3773
Fax: +656 223 9155

Avocent Canada
20 Mural Street, Unit 5
Richmond Hill, Ontario
L4B 1K3 Canada
Tel: +1 877 992 9239
Fax: +1 877 524 2985

Avocent International Ltd.
Avocent House, Shannon Free Zone
Shannon, County Clare, Ireland
Tel: +353 61 715 292
Fax: +353 61 471 871

Avocent Germany
Gottlieb-Daimler-Straße 2-4
D-33803 Steinhagen
Germany
Tel: +49 5204 9134 0
Fax: +49 5204 9134 99

590-629-501A